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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/531,163	03/17/2000	Hiroyuki Yano	0039-7632-0X	5064

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EXAMINER

DEO, DUY VU

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 12/04/2001

11

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-11

Office Action Summary

Application No.

09/531,163

Applicant(s)

YANO ET AL.

Examiner

DuyVu n Deo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-75 is/are pending in the application.
- 4a) Of the above claim(s) 40-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 44-75 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 40-43 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8,10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. This application contains claims 40-43 drawn to an invention nonelected with traverse in Paper No. 6. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 44-47, 50, 54-57, 61, 62, 65, 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ronay (5,876,490).

Ronay teaches an slurry that is used for CMP containing polymer particles, inorganic particle, and water, wherein the polymer particles has charge different from the charge associated with the inorganic particle so that the polymer particles are highly attracted to the surface of the abrasive particles to form polymer-coated inorganic particles (claims a plurality of inorganic particles are attached to a surface of polymer particles (col. 3, line 40-43; col. 4, line 55-65). This would reads on claimed zeta potential of polymer particles are opposite as that of the inorganic and they are electrostatically bonded to form composite particles. Unlike claimed invention, Ronay doesn't describe the ratio of the mean particle size of the polymer and the abrasive particles is 1-40 or from 1.5-20. However, he teaches using abrasive particles size of

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abrasive particles is 1-40 or from 1.5-20. However, he teaches using abrasive particles size of about 30-200nm (this size would have a mean particle size less than 1 um) and the polymers are in the form of submicron particles wherein the monomer unit can be about 5-200 (col. 6, line 5-31; col. 7, line 42-45). These sizes would overlap claimed ratio of 1-40. Therefore, it would have been obvious at the time of the invention for one skill in the art to determine the size of the polymers and the particles through routine experimentation in order to form a composite of particles and polymer particles to polish wafer with an anticipation of an expected result

The polymer particles have acidic groups poly(acrylic acid) (claimed carboxyl group and the anion) for the alumina abrasive or basic groups such as polymers with amino, amide, imide (claimed cation-formable nitrogen containing group and their cation) to coat silica particles. (col. 5, line 25-50). The slurry typically contain acidic oxidant (oxidizing agent) and further contains a dual-valent rare earth or suspension of its colloidal hydroxide, wherein the rare earth ion is in its higher valent form such as Ce^{4+} , Pr^{4+} and Tb^{4+} (claimed polyvalent metal ion) (col. 7, line 5-40; col 65-col. 8, line 24).

In col. 5, lines 21-22, Ronay also teaches the ratio, of the content of the polymer particles to the abrasive particles, that would overlap claimed of 0.05-1 (col. 5, line 21-22). Therefore, it would have been obvious at the time of the invention for one skill in the art to determine the amount of the polymers and the particles through routine experimentation in order to form a composite of particles and polymer particles to polish wafer with an anticipation of an expected result. The slurry further comprises a surfactant, which is typically about 0.1-2 w% (col. 8, line 6-21).

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4. Claims 58-60, 73-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ronay and further in review of Hiroto (JP 152673).

Referring to claims 58 and 73, preparing the slurry by using ultrasonic treatment or high-pressure homogenizer is known to one skill in the art. Hiroto teaches using ultrasonic dispersion with stirring to prepare the slurry (ab.)

5. Claims 48, 49, 51-53, 63, 64, 66-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Ronay as applied to claims 44, 50, 62, 65 above, and further in view of Hosali et al (US 5,738,800) and Skrovan et al. (US 5,916,819).

Referring to the pH of the slurry, Ronay describes the pH for oxide polishing is in the alkaline pH regime (col. 6, line 32-33). Skrovan teaches that pH of the slurry would be depending on the type of the surface being polished such as oxide polishing having pH greater than 9 and metal polishing having pH of about 4 (col. 5, line 20-25). Furthermore, Hosali shows in col. 3, line 1-35 that the pH of the slurry is to be determined through test run. Therefore, it would have been obvious at the time of the invention for one skill in the art to determine the pH of the slurry through routine experimentation depending on the material being polished.

Response to Arguments

6. Applicant's arguments filed 10/5/01 have been fully considered but they are not persuasive.

Referring to applicant's argument that Ronay describes an invention in which the polymer is attached to the inorganic particles, whereas the present application describes the inorganic abrasive is attached to the surface of the polymer, col. 3, line 44-45, Ronay describes the

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polymers are attached to the surface of the abrasive particles. Since the slurry would contain more than one abrasive particles, which has a size from 0.03-0.2 um, and the polymer having from 5-200 monomer units. The particles, in the slurry, would have attached to a surface of the polymer particles.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a plurality of inorganic particles is attached to the surface of a polymer particle) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Claims describe a plurality of inorganic particles are attached to a surface of polymer particles.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 703-305-0515.

DVD

December 3, 2001


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700